

Responsiveness of the Canadian Occupational Performance Measure

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Abstract—This study evaluated the responsiveness of the Canadian Occupational Performance Measure (COPM), an individualized, client-centered outcome measure for the identification and evaluation of self-perceived occupational performance problems. We recruited 152 consecutive patients with various diagnoses, admitted to the outpatient clinic of two occupational therapy departments, to complete a COPM interview and three self-reported health status questionnaires on two occasions: prior to the start of occupational therapy treatment and 3 months later. The three questionnaires were the Sickness Impact Profile (SIP68), the Disability and Impact Profile (DIP), and the Impact on Participation and Autonomy (IPA). We assessed criterion responsiveness by calculating the area under the curve (AUC) for the receiver operating characteristic curve and the optimal cutoff values for the COPM scores. To determine construct responsiveness, we calculated correlations between the change in COPM scores and the change in the SIP68, DIP, and IPA scores. The AUC ranged from 0.79 to 0.85, and the optimal cut-off values for the performance scores and satisfaction scores ranged from 0.9 to 1.9. We found significant positive correlations between the COPM scores and the SIP68, DIP, and IPA scores. The capability of the COPM to detect changes in perceived occupational performance issues is supported.

Key words: client-centered, COPM, needs assessment, occupational therapy, outcome assessment, patient participation, patient satisfaction, psychometrics, rehabilitation, treatment outcome.

INTRODUCTION

In rehabilitation, reducing disabilities and attaining independence and self-determination are important goals [1]. Assessment should therefore focus on disabilities and various aspects of occupational performance [2–3]. Occupational performance can be defined as the ability to choose, organize, and satisfactorily perform meaningful actions that are needed to look after oneself, enjoy life, and contribute to the social and economic fabric of a community [4]. This implies that not all clients need to share the same definition of enhanced occupational performance [5] and that not all clients with the same clinical status have the same goals or responses to treatment. Although many physiological measures provide clinicians with information, they often correlate poorly with functional capacity and well-being, the areas that are most important for clients [6]. A client-centered evalua-

Abbreviations: AUC = area under the curve, COPM = Canadian Occupational Performance Measure, DIP = Disability and Impact Profile, IPA = Impact on Participation and Autonomy, ROC = receiver operating characteristic, SIP68 = Sickness Impact Profile, VU = Vrije Universiteit.

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tion of occupational performance, i.e., with the Canadian Occupational Performance Measure (COPM) [7], can help account for individual changes.

The COPM is an outcome measure designed to help clients identify, prioritize, and evaluate important issues they encounter in occupational performance [7]. This individualized outcome measure is used to assess a client's self-perception of actual performance and satisfaction with this performance over time. The assessment is conducted with a semistructured interview format and a structured scoring method and aims to assess change in a client's self-perception in occupational performance over time [7]. The conceptual basis of the COPM is derived from the Canadian Model of Occupational Performance, which is now extended to the Canadian Model of Occupational Performance and Engagement [4,7–8].

The clinimetric properties of the COPM have been studied in various situations. The reproducibility of the performance and satisfaction scores was found to be poor for the individually identified problems and moderate to high for the scores averaged over all the problems identified by a client [7,9–13]. Supportive evidence was found for the content, convergent, and divergent validities of the COPM [2,7,9,11,13–18]. Clinical utility, evaluated in a number of different studies, supported the use of the COPM for a variety of clients in different settings [13,17,19–26]. The COPM is designed to not only identify the client's perceived problems but also determine whether these problems have changed over time. The capability of a measure to detect change over time is referred to as its responsiveness [27–28].

The difference between validity and responsiveness is that validity refers to the validity of a single score and responsiveness refers to the validity of a change score [29]. As a logical consequence, criterion and construct responsiveness can be defined analogous to criterion and construct validity [29]. Criterion responsiveness is defined as the extent to which change in scores on a particular instrument relates to change in the gold standard. Construct responsiveness is defined as the extent to which change in scores on a particular instrument relates to change in other measures.

Various approaches exist for measuring responsiveness [28–32]. Inappropriate measures of responsiveness are the use of effect sizes and related measures such as standardized response mean and relative efficacy statistics [33]. A suitable method to assess responsiveness is calculating change scores for clients whose health is

expected to have changed and to examine the correlation with corresponding changes in a reference measure or transition indices [30–32].

Several studies have indicated that the COPM is sensitive to change [2–3,7,12–13,20,34–35]. However, some of these studies are unpublished [7], used no criterion standard [3,7], or focused on a small study population [12,34] or specific diagnoses [20,34–35]. Therefore, the responsiveness of the COPM needs to be further evaluated.

The main objective of the present study was to evaluate the responsiveness of the COPM in a population of outpatients receiving occupational therapy interventions. Our evaluation was based on two research questions:

1. To what extent is the COPM able to detect improvement over time (criterion responsiveness)?
2. To what extent do changes in the COPM correlate with changes in other measures (construct responsiveness)?

Additionally, we evaluated the feasibility of the COPM and the correlation between the satisfaction and performance scores of the COPM.

METHODS

Study Population and Assessors

We recruited consecutive clients with various conditions who were newly referred to the outpatient occupational therapy departments of the Academic Medical Centre and the VU (Vrije Universiteit) University Medical Centre in Amsterdam. All clients received oral and written information about the study. Our intent was to include 150 clients, 75 in each center.

Inclusion criteria were 18 years or older, perceived limitations in more than one activity of daily living, and an outpatient treatment indication for occupational therapy. Clients who were currently receiving occupational therapy or had insufficient understanding of the Dutch language were excluded. Written informed consent was obtained from all participants.

Four assessors, two in each hospital, collected the data. They were all occupational therapists trained in administering the COPM. The assessors were not involved in the therapy sessions; the assessments were performed independently from the provided occupational therapy.

Instruments

The official Dutch translation of the COPM was used [36]. With the COPM, the therapist helps the client identify

activities that the client “wants, needs, or is expected to perform” [7] and in which the client experiences problems with the actual performance or is dissatisfied with the level of performance. Accordingly, the client prioritizes up to five problems that are the most urgent or important and rates each of these problems on an ordinal 10-point scale regarding performance (where 1 = “not able to do it at all” and 10 = “able to do it extremely well”) and satisfaction (where 1 = “not satisfied at all” and 10 = “extremely satisfied”). We obtained the mean scores for performance and satisfaction by summing the ratings for performance and satisfaction over the prioritized problems and dividing them by the number of prioritized problems. For an evaluation over time, at a later date the client again rates the performance and satisfaction regarding the prioritized problems of the first COPM interview. Mean scores can be compared with the mean scores of the first COPM.

To assess the criterion responsiveness, we used a transition index [37–38] to measure the perceived change in the problems as prioritized by the COPM. The perceived change in problems was graded on a 7-point ordinal scale, where 1 = “totally diminished” and 7 = “much worse.” The transition index was pretested in a small group ($n = 10$ outpatients) and did distinguish between improved and unimproved patients. Patient-reported health transition questions that describe the magnitude and direction of change in general or specific health over a given period are a valid approach to measuring change and have been widely used as external criteria in the evaluation of responsiveness [38–39].

We assessed the construct responsiveness by comparing the COPM scores with the scores for the Sickness Impact Profile (SIP68), the Disability and Impact Profile (DIP), and the Impact on Participation and Autonomy (IPA). All these instruments include scales and/or subscales on the activities and participation domain of the International Classification of Functioning, Disability and Health [40] and aim to measure the impact or importance of a condition on functioning.

The SIP68, a generic measure used for assessing the impact of illness on daily functioning and behavior [41–42], consists of 68 items that are all dichotomously scored. The items are categorized into six subscales: somatic autonomy (e.g., getting dressed, transfers), mobility control (behavior related to walking and arm function), psychological autonomy and communication (e.g., concentration, alertness, talking), emotional stability (the effect of health status on emotional behavior), social behavior, and “mobility range” (instrumental daily

activities). Subscale scores and an overall score can be calculated from the number of confirmed sickness impact items. The SIP68 is a reliable instrument and a valid discriminative method able to detect changes in health-related functional status [41].

The DIP is a self-administered questionnaire concerning activities that may be restricted because of a disabling disease [43–44]. It consists of 39 questions about symptoms (3 items) and the five domains: mobility (10 items), self-care (6 items), social activities (10 items), communication (5 items), and psychological status (5 items). Every question is rated on a 0- to 10-point scale for the current level of disability (0: maximal disability, 10: no disability) and for the importance (impact) of that particular disability (0: not important at all, 10: most important of all). The validity of the DIP is satisfactory [44–45] and its reliability is acceptable [46].

Weighted scores are calculated by determining the deficit from the normal situation by subtracting the actual disability score from 10 and multiplying this deficit by the impact score for that item. This calculation results in a combined deficit score that is divided by 100. This value is then subtracted from 1. The result is a weighted-item score, combining aspects of the disability and the impact of this disability [44,47].

The authors of the DIP defined a weighted score of <0.50 as a “major disruption of quality of life” [45]. However, because the COPM is not a norm-referenced measure, taking “major disruptions” as the starting point for comparison with the COPM was not feasible. Therefore, we chose a milder cutoff score; weighted scores ≤ 0.65 are regarded as disruptions of quality of life [16].

The IPA measures self-perceived participation [48–49]. The IPA, a self-administered generic questionnaire, assesses the impact of a condition on two different aspects of participation. One aspect is the perceived participation and autonomy for 31 items reflected in 5 domain scores (autonomy indoors, family role, autonomy outdoors, social relations, and work/education). The other aspect concerns the experienced problems related to aspects of participation, reflected in eight problem-experience scores. Perceived participation is scored on a 5-point rating scale, ranging from 1 (very good) to 5 (very poor). The perceived problems are scored on a 3-point rating scale ranging from 0 (no problem) to 2 (severe problem). For each domain, an overall score for the participation items is calculated, as well as one overall score for the eight problem-related experience items. The IPA is able to detect important within-person improvement over time,

and its reliability and validity have been found to be good [48–49].

To investigate the client's opinion about the feasibility of the COPM, we developed two questionnaires to evaluate the client's perception of the COPM assessment and reassessment. The questionnaires consisted of a 9-item version for the initial COPM assessment and a short 4-item version for the COPM reassessment. The items concerned the goal, the method used to identify the perceived problems, the amount of time involved, and the COPM scores. For example, Was the aim of the interview clear to you? Was the interview an appropriate way to identify your problems? Was there enough time to tell your story? How did you experience rating the importance of your problems (was it easy/meaningful/annoying)? In the shorter reassessment version, the items about the identification of the perceived problems and the impact of scoring the importance of these problems were not included. The COPM experience could be rated as yes, partly, no, or no opinion.

Procedure

The clients were assessed twice. The assessors were blinded for the provided occupational therapy. The client and the occupational therapist planned the reassessment together 3 months after the first session or, if the therapy ended within 3 months, before the last occupational therapy session. A period of 3 months was chosen because we expected the occupational therapy to improve occupational performance by that time. The same assessor assessed each client twice, but because of difficulties in the planning, another assessor reassessed eight clients (6%).

At the first assessment, we collected demographic information (i.e., age, diagnosis, duration of disease, sex, living situation, and cultural background) and conducted the COPM interview. At the reassessment, we asked the client to rate his/her performance and satisfaction with the prioritized problems identified during the first COPM interview. At first, we obtained scores without showing the client or the assessor the scores for that first assessment (blind scores). Later, we showed the clients their scores for the first assessment and asked them to rate their performance and satisfaction again (reflection scores).

After the first COPM assessment and the reassessment, clients completed the SIP68, DIP, IPA, and questionnaires about their opinion of the COPM assessment (9-item version) and the COPM reassessment (4-item version). After the reassessment, clients completed the tran-

sition index. The treating occupational therapist received the information obtained by the COPM assessment.

Data Analysis

We assessed the responsiveness of the COPM performance and satisfaction scores by comparing the mean performance and the mean satisfaction scores of the first assessment with the mean scores of the reassessment, respectively. The data were analyzed in SPSS version 10.0 (SPSS, Inc; Chicago, Illinois).

Criterion Responsiveness

To establish to what extent the COPM is able to detect improvement over time (criterion responsiveness), we used the transition index as an external standard to measure the perception of change [37–38]. Improvement was defined as a rating of totally diminished, diminished, or slightly diminished for at least three of the five problems on the transition index. Because the perceived occupational performance problems prioritized on the COPM are often translated into therapeutic goals for improving the client's problems, the focus of this study of the COPM's responsiveness is on identifying improvement. Clients who indicated deterioration (slightly worse, worse, or much worse) for at least three of the five problems on the transition index were excluded from the analyses. We then used receiver operating characteristic (ROC) curves [32] to assess the responsiveness of the COPM. The ROC method is considered appropriate for evaluating if a measure is as good as its "gold standard" [32]. The ROC curve plots the sensitivity (true positive rate) versus 1 minus the specificity (false negative rate) for each possible cutoff point of the COPM change scores, based on the absence of improvement as defined by the transition index.

The area under the curve (AUC) for the ROC represents the probability that a client will be correctly identified by the COPM as improved. An AUC of 0.5 indicates that the COPM is a nondiscriminating test (not accurate), whereas an AUC of 1.0 implies perfect accuracy in distinguishing improved from unimproved [50]. We also used the ROC curve to select an optimum cutoff point, which reflects the COPM change score that provides the optimal distinction between improved and unimproved clients. This cutoff score is the optimal trade-off between sensitivity and specificity and is defined as the COPM change score for the data point closest to the upper left corner of the ROC curve.

Construct Responsiveness

To study the relationship between the change in COPM scores and the change in SIP68, DIP, and IPA scores (construct responsiveness), we computed partial correlations between the reassessment scores for these measures, controlling for the scores for the initial assessment. Correlations were considered low (<0.20), moderate (between 0.20 and 0.50), or high (>0.50) according to the recommendations of Cohen [51]. We performed a one-tailed significance test. Because the COPM focuses on activities, we expected correlations to be found on the SIP68, DIP, and IPA scales for activities but not for impairment or behavior.

Feasibility and Correlations Between Performance and Satisfaction Scores

We computed partial correlation coefficients (two-tailed significance test) to assess the correlation between the mean COPM performance reassessment scores and the mean satisfaction reassessment scores, controlling for initial assessment scores. To study the differences between the performance and the satisfaction scores, we performed paired *t*-tests between the changes (difference between the initial assessment and reassessment) in the COPM mean performance and mean satisfaction scores. We performed descriptive analyses on the results of the questionnaires, assessing the client's perception of the feasibility of the COPM.

RESULTS

Study Population

Of the 243 clients invited to participate, 61 were unwilling and 30 were excluded because they did not ful-

fill the inclusion criteria ($n = 17$) or could not be contacted ($n = 9$), or on the advice of a physician ($n = 1$) or because of planning problems ($n = 3$). In total, 152 clients were included, all of whom gave informed consent. All clients were referred to the occupational therapy in the usual way and can therefore be considered typical for occupational therapy at the participating institutions. After referral, the clients were checked only according to the inclusion criterion. No significant differences existed in age (50 ± 15 , range 20–84 vs 51 ± 13 , range 25–83) or sex (62% female in both groups) between the participating and nonparticipating clients. The time interval between the first and the second assessment was 13 ± 4 (mean \pm standard deviation) weeks.

Incomplete data were obtained from 14 clients (first assessment [$n = 7$] and reassessment [$n = 7$]) because of a worsening health condition ($n = 3$), termination of the occupational therapy sessions because of other priorities in the treatment ($n = 3$), death ($n = 2$), or nonresponse ($n = 6$). Complete data were obtained from 138 clients, and their characteristics are presented in **Table 1**.

Several issues were addressed in the COPM. In the self-care category, these included, for example, cleaning vegetables, pulling up the duvet while in bed, driving a car, getting in and out of the bath, and dressing. In the productivity category, these included, for example, walking up or down stairs while carrying materials, typing on the personal computer, visiting other companies, storing groceries, and looking after grandchildren. In the leisure category, these included, for example, playing the cello, playing outside with children, walking the dog, and other uncategorized examples such as using the telephone while lying in bed or moving again after a period of inactivity.

Table 1.
Characteristics of study population ($n = 138$). All values expressed in years.

Characteristic	<i>n</i>	Mean \pm SD	Range
Age	—	51 ± 13	25–83
Sex (male/female)	53/85	—	—
Living Situation (living alone/with others)	46/92	—	—
Cultural Background Other than Dutch	19	—	—
Disease Duration of Diagnosis			
Disorders of Wrist, Hand, and Arm (e.g., repetitive strain injury, fractures, tendon injuries)	43	6 ± 11	0–60
Central Neurological Disorders (e.g., multiple sclerosis, cerebral injuries)	39	5 ± 6	0–30
Neuromuscular Diseases (e.g., postpolio syndrome, limb girdle dystrophy)	14	16 ± 19	0–65
Other Diagnoses (e.g., lumbago, osteoarthritis, ankylosing spondylitis)	42	9 ± 16	0–47

SD = standard deviation.

Criterion Responsiveness

We found significant differences between the mean COPM assessment and reassessment scores ($p < 0.001$). On the transition index, 78 of the 138 clients indicated an improvement (57%), 40 clients indicated no change (29%), and 20 clients (14%) indicated deterioration. The clients indicating deterioration ($n = 20$) were excluded from the criterion responsiveness analyses. **Table 2** shows the change scores for the mean COPM performance and satisfaction scores.

Table 2 also presents the AUCs and the cutoff values for improvement in the COPM performance and satisfaction scores. The AUCs were 0.79 (blind scores) and 0.85 (reflective scores). The optimal decision threshold (cutoff value) of the COPM for evaluating improvement perceived by the client ranged between 0.90 and 1.90 and was higher for the satisfaction scores than for the performance scores.

Construct Responsiveness

Most of the partial correlations between the COPM and the SIP68, DIP, and IPA were significant ($p < 0.01$) and positive but moderate (varying between 0.21 and 0.44) (**Table 3**). As expected, correlations between the COPM and the other measures were higher for the SIP68, DIP, and IPA subscales related to activities than for the subscales related to impairment and behavior. Low correlations were found for the SIP68 emotional stability subscale (e.g., impatience, anger) and the SIP68 psychological autonomy and communication subscale (e.g., concentration, problem-solving), the DIP communication subscale (e.g., hearing, talking, seeing), and the IPA social relations subscale (e.g., social intercourse, respect).

We found no significant correlation between the COPM and the SIP68 mobility control subscale. Fewer significant correlations existed between the COPM and

the SIP68 than between the COPM and the DIP or the IPA (**Table 3**).

Feasibility and Correlations Between Performance and Satisfaction Scores

The partial correlation between the mean COPM performance and the satisfaction reassessment scores was 0.92 ($p < 0.001$). We found significant differences for the blind scores (0.51 ± 1.11), as well as for the reflection scores (0.49 ± 1.03), between the changes (reassessment minus the initial assessment) in the mean performance and the mean satisfaction scores ($p < 0.001$).

Clients' perceptions of the COPM assessment and reassessment are presented in **Table 4**. At the initial assessment, more than 90 percent of the clients indicated that the purpose of the COPM interview was clear and that the COPM was a good way to identify the perceived problems. At the first assessment, 22.8 percent of the clients indicated that it was easy to give scores for importance and 25.9 percent indicated that it was easy to give scores for performance and satisfaction. Approximately 80 percent indicated that it was meaningful, and 5 percent of the clients indicated that it was annoying to give scores. At the reassessment, the number of clients who indicated that it was easy to give performance and satisfaction scores increased significantly from 25.9 to 46.4 percent ($p < 0.001$).

DISCUSSION

This study focused on the responsiveness of the COPM. The criterion responsiveness of the COPM indicated good discriminatory power of the COPM to detect improvement from no improvement. The authors of the COPM manual noticed that, because the COPM is an individualized measure, the meaning of the change scores

Table 2.2

Change scores and responsiveness of the Canadian Occupational Performance Measure (COPM) (area under curve [AUC] and optimal cutoff value) ($n = 118$).

Value	COPM Performance				COPM Satisfaction			
	Blind		Reflection		Blind		Reflection	
	Mean \pm SD	Range	Mean \pm SD	Range	Mean \pm SD	Range	Mean \pm SD	Range
Change Score	1.61 \pm 1.77	-2.00–6.20	1.61 \pm 1.70	-1.80–6.20	2.13 \pm 2.03	-1.60–8.50	2.08 \pm 2.00	-1.80–8.50
AUC	0.79		0.85		0.79		0.85	
Optimal Cutoff Value	1.37		0.90		1.90		1.45	

SD = standard deviation.

Table 3.3

Partial correlations between the Canadian Occupational Performance Measure (COPM) reassessment scores and reassessment scores of, respectively, categories of SIP68, DIP, and IPA questionnaires, controlling for effect of initial assessment scores (one-tailed significance test).

Questionnaire	COPM Performance		COPM Satisfaction	
	Blind	Reflection	Blind	Reflection
SIP68 Category				
Somatic Autonomy	0.2090*	0.2292*	0.1677 [†]	0.1600 [†]
Mobility Control	0.0164	0.0020	0.0322	0.0167
Social Behavior	0.2150*	0.2143*	0.2359*	0.2106*
Emotional Stability	0.0246	0.0326	0.0970	0.0880
Mobility Range	0.4043*	0.4072*	0.3566*	0.3402*
Psychological Autonomy and Communication	0.0019	0.0059	0.0155	0.0056
DIP Category				
Symptology	0.1412	0.1876 [†]	0.2266*	0.2213*
Mobility	0.3983*	0.4200*	0.4240*	0.4362*
Self-Care	0.2725*	0.2789*	0.3026*	0.3015*
Social Activities	0.2308*	0.2109*	0.2420*	0.2431*
Communication	0.1383	0.1417	0.1420	0.1473 [†]
Psychosocial Status	0.2137*	0.2506*	0.2653*	0.3092*
IPA Category				
Autonomy Indoors	0.3463*	0.3221*	0.3853*	0.3671*
Family Role	0.3646*	0.3490*	0.4100*	0.3987*
Autonomy Outdoors	0.3656*	0.3485*	0.4048*	0.3917*
Social Relations	0.1498 [†]	0.1290	0.2218*	0.2102*
Work and Education	0.2693*	0.2447*	0.3194*	0.2954*
Total (Problem-Related Experience)	0.3141*	0.3121*	0.3949*	0.3806*

* $p < 0.01$.

[†] $p < 0.05$.

DIP = Disability and Impact Profile, IPA = Impact on Participation and Autonomy, SIP = Sickness Impact Profile.

Table 4.4

Clients' perceptions of the Canadian Occupational Performance Measure (COPM) assessment and reassessment (%) ($n = 138$).

Variable	Assessment COPM				Reassessment COPM			
	Yes	Partly	No	No Opinion	Yes	Partly	No	No Opinion
Clear Purpose	98.6	1.4	—	—	96.4	2.9	0.7	—
Good Method to Identify Problems	92.8	7.2	—	—	—	—	—	—
Sufficient Space/Time	97.8	2.2	—	—	—	—	—	—
Giving Scores for Importance								
Easy	22.8	49.3	27.9	—	—	—	—	—
Meaningful	80.0	17.0	1.5	1.5	—	—	—	—
Annoying	4.5	13.4	79.9	2.2	—	—	—	—
Giving Scores for Performance and Satisfaction								
Easy	25.9	40.0	34.1	—	46.4	36.2	15.9	1.4
Meaningful	81.6	14.0	2.2	2.2	79.7	14.5	2.2	3.6
Annoying	5.3	12.0	81.2	1.5	2.9	7.2	87.7	2.2

may vary for each individual, but when the COPM is used for research, setting a change level (cutoff value) a priori is best [52]. Results of the criterion responsiveness in our study showed optimum decision thresholds (cutoffs) between clients who improved and clients who did not improve. These cutoff values were lower than the 2-point difference indicated in the COPM manual as clinically important [7].

We used an external standard, a transition index, to establish the criterion responsiveness. However, the use of such indexes can be questionable because their reliability and validity are difficult to verify and because the assessment of change is psychologically difficult, as a subtraction has to be made from the present and the initial state [53]. A solution for this dilemma is to show patients their previous scores [49]. Despite some disadvantages, transition indexes are useful alternatives when a treatment of known efficacy is missing [49]. They have proven to be useful external standards against which to compare change scores on health status measures [54]. In the present study, the COPM and the transition index were both used to evaluate the client's perceived problems. The results showed that the measured changes reflected what the client considered to be a relevant change.

The construct responsiveness of the COPM was also supported in this study, because the change scores on the COPM showed significant correlations with the domains of other instruments (SIP68, DIP, and IPA) related to activities and not on the domains related to impairment and to social and emotional behavior. The absence of significant correlations can occur because, in many disorders, no clear relationship exists between impairments and either performance or problem-related experience [7,55].

The significant correlations were moderate, probably because the COPM offers significant individual variance [16] because the COPM incorporates the individual client perspectives, expectations, and preferences in an outcome measure. With scoring systems that are based on individualized measures, the clients assess themselves. This method of measurement seems to show an improved sensitivity to change in health-related functional status compared with conventional methods that are less focused on the integration of individual patient perspectives [28].

The lower correlations between the COPM and the subscales of the SIP68 than between the COPM and both the DIP and the IPA can be explained because the SIP68 provides no information about the distinction between

the inability to perform an activity and the perception that this is a problem.

The COPM reassessment scores can be obtained with [56] and without [7] showing clients the results of the initial assessment (reflective scoring and blind scoring). The results of our study supported the responsiveness of both types of scoring. However, the results also showed that the discriminatory power of the COPM to detect improvement was lower for the blind scores than for the reflection scores. The cutoff values for the reflection scores were also lower than for the blind scores. These results demonstrate that when the COPM is used for evaluation over time, results will be interpreted differently if the initial scores are shown prior to the reassessment. If one's primary interest is to detect changes over time, showing clients the scores of their initial assessment during the reassessment appears to help avoid problems in remembering the value of the activity as scored at the initial assessment. If one's primary interest is to detect the current perception, then showing clients their previous scores does not appear advisable [52].

The performance and satisfaction scores of the COPM in the present study were highly correlated. Significant correlations have also been found in other studies for the changes in scores [17,22,56] and for the scores at the initial assessment and at the reassessment [23,26]. A possible reason for the significant correlations is that clients have difficulty interpreting the difference between the concepts of performance and satisfaction. If these two concepts are measuring the same feature, the necessity of using scores for both performance and satisfaction is questionable.

The results of our study also demonstrated that the change scores for satisfaction were 0.5 higher than the change scores for performance. These results are supported by Persson et al., who found in a study focusing on a pain management program that the improvement in satisfaction seemed to be greater than the actual change in occupational performance [23]. Most likely, a reevaluation of occupational performance took place [23]. An increase in satisfaction might reflect the process of adopting new skills and coping strategies and more adequate acceptance of an altered life situation [23]. By talking to the client about the differences between the performance and satisfaction scores, one can obtain important information about this process of reevaluation. Further research is needed to determine the necessity of using both scores, i.e., the performance score and the satisfaction score.

Finally, we asked the clients about their experiences with the COPM. Several studies indicated that the use of scales for scoring may be abstract and difficult for some clients [13,21]. Although we also found that scoring was difficult for many clients during the first COPM assessment, clients also said they thought that the COPM was a good way to identify their problems. Also, during the reassessment, the number of clients who found the scoring easy increased significantly. Possible reasons are that clients find it easier to rate their problems with performance and their satisfaction when they have used the rating scales before or when more attention is paid to their problems during the intervention.

LIMITATIONS

In the present study, we chose to use a generic population and generic interventions to establish the responsiveness of the COPM. However, looking for differences in cutoff points for specific diagnostic groups, specific interventions, and different disease stadia or disease duration would also be interesting.

Also, in this study we focused on the capability of the COPM to detect change in time but we do not know whether the therapeutic goals were directed toward the issues reported on the COPM. The results of the COPM assessment were given to the occupational therapists to use these for therapeutic purposes, but the occupational therapists were free in their choice to use this information.

In our analysis, we also focused on improvement in time because we assumed that mostly the prioritized problems on the COPM are translated into therapeutic goals. Because we have not checked this assumption, one can question whether excluding the deteriorated patients was a good decision. Also interesting to know would be whether clients are deteriorated in time, e.g., because no therapy was provided or because the clients suffer from a progressive disease.

CONCLUSIONS

Despite these limitations, our study has demonstrated that the COPM is an individualized, client-centered outcome measure that is sensitive to changes in the occupational performance and satisfaction of the client's most important problems in daily functioning. These changes over time were in accordance with the changes detected

by other measurement instruments. Since both the construct and the criterion responsiveness of the COPM are supported by the results of this study, we conclude that the changes in the COPM scores appeared to validly represent the occupational performance of the client over time.

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Responsiveness of the Canadian Occupational Performance Measure

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Abstract—This study evaluated the responsiveness of the Canadian Occupational Performance Measure (COPM), an individualized, client-centered outcome measure for the identification and evaluation of self-perceived occupational performance problems. We recruited 152 consecutive patients with various diagnoses, admitted to the outpatient clinic of two occupational therapy departments, to complete a COPM interview and three self-reported health status questionnaires on two occasions: prior to the start of occupational therapy treatment and 3 months later. The three questionnaires were the Sickness Impact Profile (SIP68), the Disability and Impact Profile (DIP), and the Impact on Participation and Autonomy (IPA). We assessed criterion responsiveness by calculating the area under the curve (AUC) for the receiver operating characteristic curve and the optimal cutoff values for the COPM scores. To determine construct responsiveness, we calculated correlations between the change in COPM scores and the change in the SIP68, DIP, and IPA scores. The AUC ranged from 0.79 to 0.85, and the optimal cut-off values for the performance scores and satisfaction scores ranged from 0.9 to 1.9. We found significant positive correlations between the COPM scores and the SIP68, DIP, and IPA scores. The capability of the COPM to detect changes in perceived occupational performance issues is supported.

Key words: client-centered, COPM, needs assessment, occupational therapy, outcome assessment, patient participation, patient satisfaction, psychometrics, rehabilitation, treatment outcome.

INTRODUCTION

In rehabilitation, reducing disabilities and attaining independence and self-determination are important goals [1]. Assessment should therefore focus on disabilities and various aspects of occupational performance [2–3]. Occupational performance can be defined as the ability to choose, organize, and satisfactorily perform meaningful actions that are needed to look after oneself, enjoy life, and contribute to the social and economic fabric of a community [4]. This implies that not all clients need to share the same definition of enhanced occupational performance [5] and that not all clients with the same clinical status have the same goals or responses to treatment. Although many physiological measures provide clinicians with information, they often correlate poorly with functional capacity and well-being, the areas that are most important for clients [6]. A client-centered evalua-

Abbreviations: AUC = area under the curve, COPM = Canadian Occupational Performance Measure, DIP = Disability and Impact Profile, IPA = Impact on Participation and Autonomy, ROC = receiver operating characteristic, SIP68 = Sickness Impact Profile, VU = Vrije Universiteit.

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tion of occupational performance, i.e., with the Canadian Occupational Performance Measure (COPM) [7], can help account for individual changes.

The COPM is an outcome measure designed to help clients identify, prioritize, and evaluate important issues they encounter in occupational performance [7]. This individualized outcome measure is used to assess a client's self-perception of actual performance and satisfaction with this performance over time. The assessment is conducted with a semistructured interview format and a structured scoring method and aims to assess change in a client's self-perception in occupational performance over time [7]. The conceptual basis of the COPM is derived from the Canadian Model of Occupational Performance, which is now extended to the Canadian Model of Occupational Performance and Engagement [4,7–8].

The clinimetric properties of the COPM have been studied in various situations. The reproducibility of the performance and satisfaction scores was found to be poor for the individually identified problems and moderate to high for the scores averaged over all the problems identified by a client [7,9–13]. Supportive evidence was found for the content, convergent, and divergent validities of the COPM [2,7,9,11,13–18]. Clinical utility, evaluated in a number of different studies, supported the use of the COPM for a variety of clients in different settings [13,17,19–26]. The COPM is designed to not only identify the client's perceived problems but also determine whether these problems have changed over time. The capability of a measure to detect change over time is referred to as its responsiveness [27–28].

The difference between validity and responsiveness is that validity refers to the validity of a single score and responsiveness refers to the validity of a change score [29]. As a logical consequence, criterion and construct responsiveness can be defined analogous to criterion and construct validity [29]. Criterion responsiveness is defined as the extent to which change in scores on a particular instrument relates to change in the gold standard. Construct responsiveness is defined as the extent to which change in scores on a particular instrument relates to change in other measures.

Various approaches exist for measuring responsiveness [28–32]. Inappropriate measures of responsiveness are the use of effect sizes and related measures such as standardized response mean and relative efficacy statistics [33]. A suitable method to assess responsiveness is calculating change scores for clients whose health is

expected to have changed and to examine the correlation with corresponding changes in a reference measure or transition indices [30–32].

Several studies have indicated that the COPM is sensitive to change [2–3,7,12–13,20,34–35]. However, some of these studies are unpublished [7], used no criterion standard [3,7], or focused on a small study population [12,34] or specific diagnoses [20,34–35]. Therefore, the responsiveness of the COPM needs to be further evaluated.

The main objective of the present study was to evaluate the responsiveness of the COPM in a population of outpatients receiving occupational therapy interventions. Our evaluation was based on two research questions:

1. To what extent is the COPM able to detect improvement over time (criterion responsiveness)?
2. To what extent do changes in the COPM correlate with changes in other measures (construct responsiveness)?

Additionally, we evaluated the feasibility of the COPM and the correlation between the satisfaction and performance scores of the COPM.

METHODS

Study Population and Assessors

We recruited consecutive clients with various conditions who were newly referred to the outpatient occupational therapy departments of the Academic Medical Centre and the VU (Vrije Universiteit) University Medical Centre in Amsterdam. All clients received oral and written information about the study. Our intent was to include 150 clients, 75 in each center.

Inclusion criteria were 18 years or older, perceived limitations in more than one activity of daily living, and an outpatient treatment indication for occupational therapy. Clients who were currently receiving occupational therapy or had insufficient understanding of the Dutch language were excluded. Written informed consent was obtained from all participants.

Four assessors, two in each hospital, collected the data. They were all occupational therapists trained in administering the COPM. The assessors were not involved in the therapy sessions; the assessments were performed independently from the provided occupational therapy.

Instruments

The official Dutch translation of the COPM was used [36]. With the COPM, the therapist helps the client identify

activities that the client “wants, needs, or is expected to perform” [7] and in which the client experiences problems with the actual performance or is dissatisfied with the level of performance. Accordingly, the client prioritizes up to five problems that are the most urgent or important and rates each of these problems on an ordinal 10-point scale regarding performance (where 1 = “not able to do it at all” and 10 = “able to do it extremely well”) and satisfaction (where 1 = “not satisfied at all” and 10 = “extremely satisfied”). We obtained the mean scores for performance and satisfaction by summing the ratings for performance and satisfaction over the prioritized problems and dividing them by the number of prioritized problems. For an evaluation over time, at a later date the client again rates the performance and satisfaction regarding the prioritized problems of the first COPM interview. Mean scores can be compared with the mean scores of the first COPM.

To assess the criterion responsiveness, we used a transition index [37–38] to measure the perceived change in the problems as prioritized by the COPM. The perceived change in problems was graded on a 7-point ordinal scale, where 1 = “totally diminished” and 7 = “much worse.” The transition index was pretested in a small group ($n = 10$ outpatients) and did distinguish between improved and unimproved patients. Patient-reported health transition questions that describe the magnitude and direction of change in general or specific health over a given period are a valid approach to measuring change and have been widely used as external criteria in the evaluation of responsiveness [38–39].

We assessed the construct responsiveness by comparing the COPM scores with the scores for the Sickness Impact Profile (SIP68), the Disability and Impact Profile (DIP), and the Impact on Participation and Autonomy (IPA). All these instruments include scales and/or subscales on the activities and participation domain of the International Classification of Functioning, Disability and Health [40] and aim to measure the impact or importance of a condition on functioning.

The SIP68, a generic measure used for assessing the impact of illness on daily functioning and behavior [41–42], consists of 68 items that are all dichotomously scored. The items are categorized into six subscales: somatic autonomy (e.g., getting dressed, transfers), mobility control (behavior related to walking and arm function), psychological autonomy and communication (e.g., concentration, alertness, talking), emotional stability (the effect of health status on emotional behavior), social behavior, and “mobility range” (instrumental daily

activities). Subscale scores and an overall score can be calculated from the number of confirmed sickness impact items. The SIP68 is a reliable instrument and a valid discriminative method able to detect changes in health-related functional status [41].

The DIP is a self-administered questionnaire concerning activities that may be restricted because of a disabling disease [43–44]. It consists of 39 questions about symptoms (3 items) and the five domains: mobility (10 items), self-care (6 items), social activities (10 items), communication (5 items), and psychological status (5 items). Every question is rated on a 0- to 10-point scale for the current level of disability (0: maximal disability, 10: no disability) and for the importance (impact) of that particular disability (0: not important at all, 10: most important of all). The validity of the DIP is satisfactory [44–45] and its reliability is acceptable [46].

Weighted scores are calculated by determining the deficit from the normal situation by subtracting the actual disability score from 10 and multiplying this deficit by the impact score for that item. This calculation results in a combined deficit score that is divided by 100. This value is then subtracted from 1. The result is a weighted-item score, combining aspects of the disability and the impact of this disability [44,47].

The authors of the DIP defined a weighted score of <0.50 as a “major disruption of quality of life” [45]. However, because the COPM is not a norm-referenced measure, taking “major disruptions” as the starting point for comparison with the COPM was not feasible. Therefore, we chose a milder cutoff score; weighted scores ≤ 0.65 are regarded as disruptions of quality of life [16].

The IPA measures self-perceived participation [48–49]. The IPA, a self-administered generic questionnaire, assesses the impact of a condition on two different aspects of participation. One aspect is the perceived participation and autonomy for 31 items reflected in 5 domain scores (autonomy indoors, family role, autonomy outdoors, social relations, and work/education). The other aspect concerns the experienced problems related to aspects of participation, reflected in eight problem-experience scores. Perceived participation is scored on a 5-point rating scale, ranging from 1 (very good) to 5 (very poor). The perceived problems are scored on a 3-point rating scale ranging from 0 (no problem) to 2 (severe problem). For each domain, an overall score for the participation items is calculated, as well as one overall score for the eight problem-related experience items. The IPA is able to detect important within-person improvement over time,

and its reliability and validity have been found to be good [48–49].

To investigate the client's opinion about the feasibility of the COPM, we developed two questionnaires to evaluate the client's perception of the COPM assessment and reassessment. The questionnaires consisted of a 9-item version for the initial COPM assessment and a short 4-item version for the COPM reassessment. The items concerned the goal, the method used to identify the perceived problems, the amount of time involved, and the COPM scores. For example, Was the aim of the interview clear to you? Was the interview an appropriate way to identify your problems? Was there enough time to tell your story? How did you experience rating the importance of your problems (was it easy/meaningful/annoying)? In the shorter reassessment version, the items about the identification of the perceived problems and the impact of scoring the importance of these problems were not included. The COPM experience could be rated as yes, partly, no, or no opinion.

Procedure

The clients were assessed twice. The assessors were blinded for the provided occupational therapy. The client and the occupational therapist planned the reassessment together 3 months after the first session or, if the therapy ended within 3 months, before the last occupational therapy session. A period of 3 months was chosen because we expected the occupational therapy to improve occupational performance by that time. The same assessor assessed each client twice, but because of difficulties in the planning, another assessor reassessed eight clients (6%).

At the first assessment, we collected demographic information (i.e., age, diagnosis, duration of disease, sex, living situation, and cultural background) and conducted the COPM interview. At the reassessment, we asked the client to rate his/her performance and satisfaction with the prioritized problems identified during the first COPM interview. At first, we obtained scores without showing the client or the assessor the scores for that first assessment (blind scores). Later, we showed the clients their scores for the first assessment and asked them to rate their performance and satisfaction again (reflection scores).

After the first COPM assessment and the reassessment, clients completed the SIP68, DIP, IPA, and questionnaires about their opinion of the COPM assessment (9-item version) and the COPM reassessment (4-item version). After the reassessment, clients completed the tran-

sition index. The treating occupational therapist received the information obtained by the COPM assessment.

Data Analysis

We assessed the responsiveness of the COPM performance and satisfaction scores by comparing the mean performance and the mean satisfaction scores of the first assessment with the mean scores of the reassessment, respectively. The data were analyzed in SPSS version 10.0 (SPSS, Inc; Chicago, Illinois).

Criterion Responsiveness

To establish to what extent the COPM is able to detect improvement over time (criterion responsiveness), we used the transition index as an external standard to measure the perception of change [37–38]. Improvement was defined as a rating of totally diminished, diminished, or slightly diminished for at least three of the five problems on the transition index. Because the perceived occupational performance problems prioritized on the COPM are often translated into therapeutic goals for improving the client's problems, the focus of this study of the COPM's responsiveness is on identifying improvement. Clients who indicated deterioration (slightly worse, worse, or much worse) for at least three of the five problems on the transition index were excluded from the analyses. We then used receiver operating characteristic (ROC) curves [32] to assess the responsiveness of the COPM. The ROC method is considered appropriate for evaluating if a measure is as good as its "gold standard" [32]. The ROC curve plots the sensitivity (true positive rate) versus 1 minus the specificity (false negative rate) for each possible cutoff point of the COPM change scores, based on the absence of improvement as defined by the transition index.

The area under the curve (AUC) for the ROC represents the probability that a client will be correctly identified by the COPM as improved. An AUC of 0.5 indicates that the COPM is a nondiscriminating test (not accurate), whereas an AUC of 1.0 implies perfect accuracy in distinguishing improved from unimproved [50]. We also used the ROC curve to select an optimum cutoff point, which reflects the COPM change score that provides the optimal distinction between improved and unimproved clients. This cutoff score is the optimal trade-off between sensitivity and specificity and is defined as the COPM change score for the data point closest to the upper left corner of the ROC curve.

Construct Responsiveness

To study the relationship between the change in COPM scores and the change in SIP68, DIP, and IPA scores (construct responsiveness), we computed partial correlations between the reassessment scores for these measures, controlling for the scores for the initial assessment. Correlations were considered low (<0.20), moderate (between 0.20 and 0.50), or high (>0.50) according to the recommendations of Cohen [51]. We performed a one-tailed significance test. Because the COPM focuses on activities, we expected correlations to be found on the SIP68, DIP, and IPA scales for activities but not for impairment or behavior.

Feasibility and Correlations Between Performance and Satisfaction Scores

We computed partial correlation coefficients (two-tailed significance test) to assess the correlation between the mean COPM performance reassessment scores and the mean satisfaction reassessment scores, controlling for initial assessment scores. To study the differences between the performance and the satisfaction scores, we performed paired *t*-tests between the changes (difference between the initial assessment and reassessment) in the COPM mean performance and mean satisfaction scores. We performed descriptive analyses on the results of the questionnaires, assessing the client's perception of the feasibility of the COPM.

RESULTS

Study Population

Of the 243 clients invited to participate, 61 were unwilling and 30 were excluded because they did not ful-

fill the inclusion criteria ($n = 17$) or could not be contacted ($n = 9$), or on the advice of a physician ($n = 1$) or because of planning problems ($n = 3$). In total, 152 clients were included, all of whom gave informed consent. All clients were referred to the occupational therapy in the usual way and can therefore be considered typical for occupational therapy at the participating institutions. After referral, the clients were checked only according to the inclusion criterion. No significant differences existed in age (50 ± 15 , range 20–84 vs 51 ± 13 , range 25–83) or sex (62% female in both groups) between the participating and nonparticipating clients. The time interval between the first and the second assessment was 13 ± 4 (mean \pm standard deviation) weeks.

Incomplete data were obtained from 14 clients (first assessment [$n = 7$] and reassessment [$n = 7$]) because of a worsening health condition ($n = 3$), termination of the occupational therapy sessions because of other priorities in the treatment ($n = 3$), death ($n = 2$), or nonresponse ($n = 6$). Complete data were obtained from 138 clients, and their characteristics are presented in **Table 1**.

Several issues were addressed in the COPM. In the self-care category, these included, for example, cleaning vegetables, pulling up the duvet while in bed, driving a car, getting in and out of the bath, and dressing. In the productivity category, these included, for example, walking up or down stairs while carrying materials, typing on the personal computer, visiting other companies, storing groceries, and looking after grandchildren. In the leisure category, these included, for example, playing the cello, playing outside with children, walking the dog, and other uncategorized examples such as using the telephone while lying in bed or moving again after a period of inactivity.

Table 1.
Characteristics of study population ($n = 138$). All values expressed in years.

Characteristic	<i>n</i>	Mean \pm SD	Range
Age	—	51 ± 13	25–83
Sex (male/female)	53/85	—	—
Living Situation (living alone/with others)	46/92	—	—
Cultural Background Other than Dutch	19	—	—
Disease Duration of Diagnosis			
Disorders of Wrist, Hand, and Arm (e.g., repetitive strain injury, fractures, tendon injuries)	43	6 ± 11	0–60
Central Neurological Disorders (e.g., multiple sclerosis, cerebral injuries)	39	5 ± 6	0–30
Neuromuscular Diseases (e.g., postpolio syndrome, limb girdle dystrophy)	14	16 ± 19	0–65
Other Diagnoses (e.g., lumbago, osteoarthritis, ankylosing spondylitis)	42	9 ± 16	0–47

SD = standard deviation.

Criterion Responsiveness

We found significant differences between the mean COPM assessment and reassessment scores ($p < 0.001$). On the transition index, 78 of the 138 clients indicated an improvement (57%), 40 clients indicated no change (29%), and 20 clients (14%) indicated deterioration. The clients indicating deterioration ($n = 20$) were excluded from the criterion responsiveness analyses. **Table 2** shows the change scores for the mean COPM performance and satisfaction scores.

Table 2 also presents the AUCs and the cutoff values for improvement in the COPM performance and satisfaction scores. The AUCs were 0.79 (blind scores) and 0.85 (reflective scores). The optimal decision threshold (cutoff value) of the COPM for evaluating improvement perceived by the client ranged between 0.90 and 1.90 and was higher for the satisfaction scores than for the performance scores.

Construct Responsiveness

Most of the partial correlations between the COPM and the SIP68, DIP, and IPA were significant ($p < 0.01$) and positive but moderate (varying between 0.21 and 0.44) (**Table 3**). As expected, correlations between the COPM and the other measures were higher for the SIP68, DIP, and IPA subscales related to activities than for the subscales related to impairment and behavior. Low correlations were found for the SIP68 emotional stability subscale (e.g., impatience, anger) and the SIP68 psychological autonomy and communication subscale (e.g., concentration, problem-solving), the DIP communication subscale (e.g., hearing, talking, seeing), and the IPA social relations subscale (e.g., social intercourse, respect).

We found no significant correlation between the COPM and the SIP68 mobility control subscale. Fewer significant correlations existed between the COPM and

the SIP68 than between the COPM and the DIP or the IPA (**Table 3**).

Feasibility and Correlations Between Performance and Satisfaction Scores

The partial correlation between the mean COPM performance and the satisfaction reassessment scores was 0.92 ($p < 0.001$). We found significant differences for the blind scores (0.51 ± 1.11), as well as for the reflection scores (0.49 ± 1.03), between the changes (reassessment minus the initial assessment) in the mean performance and the mean satisfaction scores ($p < 0.001$).

Clients' perceptions of the COPM assessment and reassessment are presented in **Table 4**. At the initial assessment, more than 90 percent of the clients indicated that the purpose of the COPM interview was clear and that the COPM was a good way to identify the perceived problems. At the first assessment, 22.8 percent of the clients indicated that it was easy to give scores for importance and 25.9 percent indicated that it was easy to give scores for performance and satisfaction. Approximately 80 percent indicated that it was meaningful, and 5 percent of the clients indicated that it was annoying to give scores. At the reassessment, the number of clients who indicated that it was easy to give performance and satisfaction scores increased significantly from 25.9 to 46.4 percent ($p < 0.001$).

DISCUSSION

This study focused on the responsiveness of the COPM. The criterion responsiveness of the COPM indicated good discriminatory power of the COPM to detect improvement from no improvement. The authors of the COPM manual noticed that, because the COPM is an individualized measure, the meaning of the change scores

Table 2

Change scores and responsiveness of the Canadian Occupational Performance Measure (COPM) (area under curve [AUC] and optimal cutoff value) ($n = 118$).

Value	COPM Performance				COPM Satisfaction			
	Blind		Reflection		Blind		Reflection	
	Mean \pm SD	Range	Mean \pm SD	Range	Mean \pm SD	Range	Mean \pm SD	Range
Change Score	1.61 \pm 1.77	-2.00–6.20	1.61 \pm 1.70	-1.80–6.20	2.13 \pm 2.03	-1.60–8.50	2.08 \pm 2.00	-1.80–8.50
AUC	0.79		0.85		0.79		0.85	
Optimal Cutoff Value	1.37		0.90		1.90		1.45	

SD = standard deviation.

Table 3

Partial correlations between the Canadian Occupational Performance Measure (COPM) reassessment scores and reassessment scores of, respectively, categories of SIP68, DIP, and IPA questionnaires, controlling for effect of initial assessment scores (one-tailed significance test).

Questionnaire	COPM Performance		COPM Satisfaction	
	Blind	Reflection	Blind	Reflection
SIP68 Category				
Somatic Autonomy	0.2090*	0.2292*	0.1677 [†]	0.1600 [†]
Mobility Control	0.0164	0.0020	0.0322	0.0167
Social Behavior	0.2150*	0.2143*	0.2359*	0.2106*
Emotional Stability	0.0246	0.0326	0.0970	0.0880
Mobility Range	0.4043*	0.4072*	0.3566*	0.3402*
Psychological Autonomy and Communication	0.0019	0.0059	0.0155	0.0056
DIP Category				
Symptology	0.1412	0.1876 [†]	0.2266*	0.2213*
Mobility	0.3983*	0.4200*	0.4240*	0.4362*
Self-Care	0.2725*	0.2789*	0.3026*	0.3015*
Social Activities	0.2308*	0.2109*	0.2420*	0.2431*
Communication	0.1383	0.1417	0.1420	0.1473 [†]
Psychosocial Status	0.2137*	0.2506*	0.2653*	0.3092*
IPA Category				
Autonomy Indoors	0.3463*	0.3221*	0.3853*	0.3671*
Family Role	0.3646*	0.3490*	0.4100*	0.3987*
Autonomy Outdoors	0.3656*	0.3485*	0.4048*	0.3917*
Social Relations	0.1498 [†]	0.1290	0.2218*	0.2102*
Work and Education	0.2693*	0.2447*	0.3194*	0.2954*
Total (Problem-Related Experience)	0.3141*	0.3121*	0.3949*	0.3806*

* $p < 0.01$.

[†] $p < 0.05$.

DIP = Disability and Impact Profile, IPA = Impact on Participation and Autonomy, SIP = Sickness Impact Profile.

Table 4

Clients' perceptions of the Canadian Occupational Performance Measure (COPM) assessment and reassessment (%) ($n = 138$).

Variable	Assessment COPM				Reassessment COPM			
	Yes	Partly	No	No Opinion	Yes	Partly	No	No Opinion
Clear Purpose	98.6	1.4	—	—	96.4	2.9	0.7	—
Good Method to Identify Problems	92.8	7.2	—	—	—	—	—	—
Sufficient Space/Time	97.8	2.2	—	—	—	—	—	—
Giving Scores for Importance								
Easy	22.8	49.3	27.9	—	—	—	—	—
Meaningful	80.0	17.0	1.5	1.5	—	—	—	—
Annoying	4.5	13.4	79.9	2.2	—	—	—	—
Giving Scores for Performance and Satisfaction								
Easy	25.9	40.0	34.1	—	46.4	36.2	15.9	1.4
Meaningful	81.6	14.0	2.2	2.2	79.7	14.5	2.2	3.6
Annoying	5.3	12.0	81.2	1.5	2.9	7.2	87.7	2.2

may vary for each individual, but when the COPM is used for research, setting a change level (cutoff value) a priori is best [52]. Results of the criterion responsiveness in our study showed optimum decision thresholds (cutoffs) between clients who improved and clients who did not improve. These cutoff values were lower than the 2-point difference indicated in the COPM manual as clinically important [7].

We used an external standard, a transition index, to establish the criterion responsiveness. However, the use of such indexes can be questionable because their reliability and validity are difficult to verify and because the assessment of change is psychologically difficult, as a subtraction has to be made from the present and the initial state [53]. A solution for this dilemma is to show patients their previous scores [49]. Despite some disadvantages, transition indexes are useful alternatives when a treatment of known efficacy is missing [49]. They have proven to be useful external standards against which to compare change scores on health status measures [54]. In the present study, the COPM and the transition index were both used to evaluate the client's perceived problems. The results showed that the measured changes reflected what the client considered to be a relevant change.

The construct responsiveness of the COPM was also supported in this study, because the change scores on the COPM showed significant correlations with the domains of other instruments (SIP68, DIP, and IPA) related to activities and not on the domains related to impairment and to social and emotional behavior. The absence of significant correlations can occur because, in many disorders, no clear relationship exists between impairments and either performance or problem-related experience [7,55].

The significant correlations were moderate, probably because the COPM offers significant individual variance [16] because the COPM incorporates the individual client perspectives, expectations, and preferences in an outcome measure. With scoring systems that are based on individualized measures, the clients assess themselves. This method of measurement seems to show an improved sensitivity to change in health-related functional status compared with conventional methods that are less focused on the integration of individual patient perspectives [28].

The lower correlations between the COPM and the subscales of the SIP68 than between the COPM and both the DIP and the IPA can be explained because the SIP68 provides no information about the distinction between

the inability to perform an activity and the perception that this is a problem.

The COPM reassessment scores can be obtained with [56] and without [7] showing clients the results of the initial assessment (reflective scoring and blind scoring). The results of our study supported the responsiveness of both types of scoring. However, the results also showed that the discriminatory power of the COPM to detect improvement was lower for the blind scores than for the reflection scores. The cutoff values for the reflection scores were also lower than for the blind scores. These results demonstrate that when the COPM is used for evaluation over time, results will be interpreted differently if the initial scores are shown prior to the reassessment. If one's primary interest is to detect changes over time, showing clients the scores of their initial assessment during the reassessment appears to help avoid problems in remembering the value of the activity as scored at the initial assessment. If one's primary interest is to detect the current perception, then showing clients their previous scores does not appear advisable [52].

The performance and satisfaction scores of the COPM in the present study were highly correlated. Significant correlations have also been found in other studies for the changes in scores [17,22,56] and for the scores at the initial assessment and at the reassessment [23,26]. A possible reason for the significant correlations is that clients have difficulty interpreting the difference between the concepts of performance and satisfaction. If these two concepts are measuring the same feature, the necessity of using scores for both performance and satisfaction is questionable.

The results of our study also demonstrated that the change scores for satisfaction were 0.5 higher than the change scores for performance. These results are supported by Persson et al., who found in a study focusing on a pain management program that the improvement in satisfaction seemed to be greater than the actual change in occupational performance [23]. Most likely, a reevaluation of occupational performance took place [23]. An increase in satisfaction might reflect the process of adopting new skills and coping strategies and more adequate acceptance of an altered life situation [23]. By talking to the client about the differences between the performance and satisfaction scores, one can obtain important information about this process of reevaluation. Further research is needed to determine the necessity of using both scores, i.e., the performance score and the satisfaction score.

Finally, we asked the clients about their experiences with the COPM. Several studies indicated that the use of scales for scoring may be abstract and difficult for some clients [13,21]. Although we also found that scoring was difficult for many clients during the first COPM assessment, clients also said they thought that the COPM was a good way to identify their problems. Also, during the reassessment, the number of clients who found the scoring easy increased significantly. Possible reasons are that clients find it easier to rate their problems with performance and their satisfaction when they have used the rating scales before or when more attention is paid to their problems during the intervention.

LIMITATIONS

In the present study, we chose to use a generic population and generic interventions to establish the responsiveness of the COPM. However, looking for differences in cutoff points for specific diagnostic groups, specific interventions, and different disease stadia or disease duration would also be interesting.

Also, in this study we focused on the capability of the COPM to detect change in time but we do not know whether the therapeutic goals were directed toward the issues reported on the COPM. The results of the COPM assessment were given to the occupational therapists to use these for therapeutic purposes, but the occupational therapists were free in their choice to use this information.

In our analysis, we also focused on improvement in time because we assumed that mostly the prioritized problems on the COPM are translated into therapeutic goals. Because we have not checked this assumption, one can question whether excluding the deteriorated patients was a good decision. Also interesting to know would be whether clients are deteriorated in time, e.g., because no therapy was provided or because the clients suffer from a progressive disease.

CONCLUSIONS

Despite these limitations, our study has demonstrated that the COPM is an individualized, client-centered outcome measure that is sensitive to changes in the occupational performance and satisfaction of the client's most important problems in daily functioning. These changes over time were in accordance with the changes detected

by other measurement instruments. Since both the construct and the criterion responsiveness of the COPM are supported by the results of this study, we conclude that the changes in the COPM scores appeared to validly represent the occupational performance of the client over time.

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